## Analysis Summary

## Catalina Medina

## 10/21/2020

```
##
## Standard deviations and 0.95 confidence intervals:
##
## std.dev lower upper
## s(adj_time_days) 1.99948716 1.20814530 3.30916233
## ti(adj_time_days,adj_med_income)1 0.09792246 0.04112418 0.23316713
## ti(adj_time_days,adj_med_income)2 0.03053270 0.01138198 0.08190543
## s(zip) 0.17438869 0.14318657 0.21239015
##
## Rank: 4/4
```

The AIC prefers gam model with interaction to gam model without. BIC does not have a preference between a linear or quadratic fit to time

	Effective DF	Ref. DF	Chi Sq.	p-value
$s(adj\_time\_days)$	8.743682	8.963131	5943.5693	0
ti(adj_time_days,adj_med_income)	11.226475	16.000000	594.3739	0
s(zip)	65.150907	78.000000	1248.3560	0

Table 1: GAM regression estimation of odds of testing positive for covid in Orange county from March 1st to August 16, 2020. Model has a smooth term for time and an interaction between median income and time.

Age         COVID19+         Total         with (95% CI¹)           0-4         513 (1.19%)         5479 (1.29%)         Reference           5-9         909 (2.11%)         5625 (1.33%)         0.427 (0.4, 0.46)           10-14         2315 (5.38%)         16194 (3.82%)         0.393 (0.37, 0.42)           15-19         5176 (12.04%)         41168 (9.72%)         1.217 (1.15, 1.29)           20-24         5249 (12.21%)         45934 (10.85%)         0.736 (0.69, 0.78)           25-29         4313 (10.03%)         39171 (9.25%)         1.325 (1.25, 1.41)           30-34         3732 (8.68%)         33937 (8.01%)         1.299 (1.22, 1.38)           35-39         6792 (15.8%)         59994 (14.17%)         0.94 (0.89, 1)           40-49         523 (1.22%)         4224 (1%)         0.966 (0.92, 1.02)           50-59         6644 (15.45%)         65560 (15.48%)         0.95 (0.91, 1)           60-69         3630 (8.44%)         49030 (11.58%)         0.997 (0.96, 1.04)           70-79         1787 (4.16%)         31556 (7.45%)         0.996 (0.95, 1.02)           80+         1412 (3.28%)         25600 (6.05%)         1.008 (0.98, 1.04)           8ace         4         21961 (51.08%)         232798 (54.97%)         Reference		Counts		Adjusted Odds*
0-4		COVID19+	Total	with $(95\% \text{ CI}^{\dagger})$
5-9   909 (2.11%)   5625 (1.33%)   0.427 (0.4, 0.46)     10-14   2315 (5.38%)   16194 (3.82%)   0.393 (0.37, 0.42)     15-19   5176 (12.04%)   41168 (9.72%)   1.217 (1.15, 1.29)     20-24   5249 (12.21%)   45934 (10.85%)   0.736 (0.69, 0.78)     25-29   4313 (10.03%)   39171 (9.25%)   1.325 (1.25, 1.41)     30-34   3732 (8.68%)   33937 (8.01%)   1.299 (1.22, 1.38)     35-39   6792 (15.8%)   59994 (14.17%)   0.94 (0.89, 1)     40-49   523 (1.22%)   4224 (1%)   0.966 (0.92, 1.02)     50-59   6644 (15.45%)   65560 (15.48%)   0.95 (0.91, 1)     60-69   3630 (8.44%)   49030 (11.58%)   0.997 (0.96, 1.04)     70-79   1787 (4.16%)   31556 (7.45%)   0.986 (0.95, 1.02)     80+   1412 (3.28%)   25600 (6.05%)   1.008 (0.98, 1.04)     Sex   Female   21961 (51.08%)   232798 (54.97%)   Reference     Male   21034 (48.92%)   190674 (45.03%)   1.205 (1.18, 1.23)     Race   White   14465 (33.64%)   86010 (20.31%)   Reference     Native American or Alaskan   63 (0.15%)   422 (0.1%)   0.765 (0.58, 1.01)     Asian   2066 (4.81%)   20229 (4.78%)   0.556 (0.53, 0.58)     Black or African American   341 (0.79%)   2870 (0.68%)   0.545 (0.48, 0.61)     Native Hawaiian or Pacific Islander   152 (0.35%)   2037 (0.48%)   0.363 (0.31, 0.43)     Other   7900 (18.37%)   54667 (12.91%)   0.578 (0.56, 0.6)     Unknown   18008 (41.88%)   257237 (60.74%)   0.29 (0.28, 0.3)     Zip Code POP with Bachelors   11291 (26.26%)   115455 (27.26%)   Reference   2nd Quartile   11291 (26.26%)   100281 (23.68%)   0.549 (0.44, 0.69)     4th Quartile   18911 (43.89%)   118530 (27.99%)   Reference   2nd Quartile   11921 (26.26%)   102569 (242%)   0.776 (0.67, 0.89)     3rd Quartile   18911 (43.98%)   118530 (27.99%)   Reference   2nd Quartile   10882 (25.31%)   101629 (24%)   0.776 (0.67, 0.89)     3rd Quartile   18911 (43.98%)   118530 (27.99%)   Reference   2nd Quartile   10882 (25.31%)   101629 (24%)   0.776 (0.67, 0.89)     3rd Quartile   10882 (25.31%)   101629 (24%)   0.776 (0.67, 0.89)     3rd Quartile   10882 (25.31%)   101629 (24%)   0.776 (0.67, 0.89	Age	-1		
10-14	0-4	513 (1.19%)	5479 (1.29%)	Reference
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	5-9	909 (2.11%)	5625 (1.33%)	0.427 (0.4, 0.46)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	10-14	2315 (5.38%)	16194 (3.82%)	0.393 (0.37, 0.42)
25-29	15-19	5176 (12.04%)	41168 (9.72%)	
30-34   3732 (8.68%)   33937 (8.01%)   1.299 (1.22, 1.38)     35-39	20-24	5249 (12.21%)	45934 (10.85%)	0.736 (0.69, 0.78)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	25-29	4313 (10.03%)	39171 (9.25%)	1.325 (1.25, 1.41)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	30-34	3732 (8.68%)	33937 (8.01%)	1.299 (1.22, 1.38)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	35-39	6792 (15.8%)	59994 (14.17%)	0.94 (0.89, 1)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	40-49	523 (1.22%)	4224 (1%)	0.966 (0.92, 1.02)
70-79         1787 (4.16%)         31556 (7.45%)         0.986 (0.95, 1.02)           80+         1412 (3.28%)         25600 (6.05%)         1.008 (0.98, 1.04)           Sex           Female         21961 (51.08%)         232798 (54.97%)         Reference           Male         21034 (48.92%)         190674 (45.03%)         1.205 (1.18, 1.23)           Race           White         14465 (33.64%)         86010 (20.31%)         Reference           Native American or Alaskan         63 (0.15%)         422 (0.1%)         0.765 (0.58, 1.01)           Asian         2066 (4.81%)         20229 (4.78%)         0.556 (0.53, 0.58)           Black or African American         341 (0.79%)         2870 (0.68%)         0.545 (0.48, 0.61)           Native Hawaiian or Pacific Islander         152 (0.35%)         2037 (0.48%)         0.363 (0.31, 0.43)           Other         7900 (18.37%)         54667 (12.91%)         0.578 (0.56, 0.6)           Unknown         18008 (41.88%)         257237 (60.74%)         0.29 (0.28, 0.3)           Zip Code POP with Bachelors         115455 (27.26%)         Reference           2nd Quartile         11291 (26.26%)         102569 (24.22%)         0.751 (0.64, 0.89)           3rd Quartile         5974 (13.89%) </td <td>50-59</td> <td>6644 (15.45%)</td> <td>65560 (15.48%)</td> <td>0.95 (0.91, 1)</td>	50-59	6644 (15.45%)	65560 (15.48%)	0.95 (0.91, 1)
80+         1412 (3.28%)         25600 (6.05%)         1.008 (0.98, 1.04)           Sex           Female         21961 (51.08%)         232798 (54.97%)         Reference           Male         21034 (48.92%)         190674 (45.03%)         1.205 (1.18, 1.23)           Race         White         14465 (33.64%)         86010 (20.31%)         Reference           Native American or Alaskan         63 (0.15%)         422 (0.1%)         0.765 (0.58, 1.01)           Asian         2066 (4.81%)         20229 (4.78%)         0.556 (0.53, 0.58)           Black or African American         341 (0.79%)         2870 (0.68%)         0.545 (0.48, 0.61)           Native Hawaiian or Pacific Islander         152 (0.35%)         2037 (0.48%)         0.363 (0.31, 0.43)           Other         7900 (18.37%)         54667 (12.91%)         0.578 (0.56, 0.6)           Unknown         18008 (41.88%)         257237 (60.74%)         0.29 (0.28, 0.3)           Zip Code POP with Bachelors         11291 (26.26%)         115455 (27.26%)         Reference           2nd Quartile         11291 (26.26%)         102569 (24.22%)         0.751 (0.64, 0.89)           3rd Quartile         7348 (17.09%)         100281 (23.68%)         0.549 (0.44, 0.69)           4th Quartile         18911 (43.98%)	60-69	3630 (8.44%)	49030 (11.58%)	0.997 (0.96, 1.04)
Sex         Female         21961 (51.08%)         232798 (54.97%)         Reference           Male         21034 (48.92%)         190674 (45.03%)         1.205 (1.18, 1.23)           Race         White         14465 (33.64%)         86010 (20.31%)         Reference           Native American or Alaskan         63 (0.15%)         422 (0.1%)         0.765 (0.58, 1.01)           Asian         2066 (4.81%)         20229 (4.78%)         0.556 (0.53, 0.58)           Black or African American         341 (0.79%)         2870 (0.68%)         0.545 (0.48, 0.61)           Native Hawaiian or Pacific Islander         152 (0.35%)         2037 (0.48%)         0.363 (0.31, 0.43)           Other         7900 (18.37%)         54667 (12.91%)         0.578 (0.56, 0.6)           Unknown         18008 (41.88%)         257237 (60.74%)         0.29 (0.28, 0.3)           Zip Code POP with Bachelors         11291 (26.26%)         115455 (27.26%)         Reference           2nd Quartile         11291 (26.26%)         102569 (24.22%)         0.751 (0.64, 0.89)           3rd Quartile         7348 (17.09%)         100281 (23.68%)         0.549 (0.44, 0.69)           4th Quartile         5974 (13.89%)         105167 (24.83%)         0.482 (0.37, 0.62)           Zip Code POP insured         18911 (43.98%)<	70-79	1787 (4.16%)	31556 (7.45%)	0.986 (0.95, 1.02)
Female         21961 (51.08%)         232798 (54.97%)         Reference           Male         21034 (48.92%)         190674 (45.03%)         1.205 (1.18, 1.23)           Race           White         14465 (33.64%)         86010 (20.31%)         Reference           Native American or Alaskan         63 (0.15%)         422 (0.1%)         0.765 (0.58, 1.01)           Asian         2066 (4.81%)         20229 (4.78%)         0.556 (0.53, 0.58)           Black or African American         341 (0.79%)         2870 (0.68%)         0.545 (0.48, 0.61)           Native Hawaiian or Pacific Islander         152 (0.35%)         2037 (0.48%)         0.363 (0.31, 0.43)           Other         7900 (18.37%)         54667 (12.91%)         0.578 (0.56, 0.6)           Unknown         18008 (41.88%)         257237 (60.74%)         0.29 (0.28, 0.3)           Zip Code POP with Bachelors         11291 (26.26%)         102569 (24.22%)         0.751 (0.64, 0.89)           3rd Quartile         11291 (26.26%)         100281 (23.68%)         0.549 (0.44, 0.69)           4th Quartile         5974 (13.89%)         105167 (24.83%)         0.482 (0.37, 0.62)           Zip Code POP insured           1st Quartile         18911 (43.98%)         118530 (27.99%)         Reference           2nd Quart	80+	1412 (3.28%)	25600 (6.05%)	1.008 (0.98, 1.04)
Male         21034 (48.92%)         190674 (45.03%)         1.205 (1.18, 1.23)           Race           White         14465 (33.64%)         86010 (20.31%)         Reference           Native American or Alaskan         63 (0.15%)         422 (0.1%)         0.765 (0.58, 1.01)           Asian         2066 (4.81%)         20229 (4.78%)         0.556 (0.53, 0.58)           Black or African American         341 (0.79%)         2870 (0.68%)         0.545 (0.48, 0.61)           Native Hawaiian or Pacific Islander         152 (0.35%)         2037 (0.48%)         0.363 (0.31, 0.43)           Other         7900 (18.37%)         54667 (12.91%)         0.578 (0.56, 0.6)           Unknown         18008 (41.88%)         257237 (60.74%)         0.29 (0.28, 0.3)           Zip Code POP with Bachelors         11291 (26.26%)         115455 (27.26%)         Reference           2nd Quartile         11291 (26.26%)         102569 (24.22%)         0.751 (0.64, 0.89)           3rd Quartile         7348 (17.09%)         100281 (23.68%)         0.549 (0.44, 0.69)           4th Quartile         5974 (13.89%)         105167 (24.83%)         0.482 (0.37, 0.62)           Zip Code POP insured         18911 (43.98%)         118530 (27.99%)         Reference           2nd Quartile         10882 (25.31%)	Sex			
Race         White         14465 (33.64%)         86010 (20.31%)         Reference           Native American or Alaskan         63 (0.15%)         422 (0.1%)         0.765 (0.58, 1.01)           Asian         2066 (4.81%)         20229 (4.78%)         0.556 (0.53, 0.58)           Black or African American         341 (0.79%)         2870 (0.68%)         0.545 (0.48, 0.61)           Native Hawaiian or Pacific Islander         152 (0.35%)         2037 (0.48%)         0.363 (0.31, 0.43)           Other         7900 (18.37%)         54667 (12.91%)         0.578 (0.56, 0.6)           Unknown         18008 (41.88%)         257237 (60.74%)         0.29 (0.28, 0.3)           Zip Code POP with Bachelors         18382 (42.75%)         115455 (27.26%)         Reference           2nd Quartile         11291 (26.26%)         102569 (24.22%)         0.751 (0.64, 0.89)           3rd Quartile         7348 (17.09%)         100281 (23.68%)         0.549 (0.44, 0.69)           4th Quartile         5974 (13.89%)         105167 (24.83%)         0.482 (0.37, 0.62)           Zip Code POP insured         18911 (43.98%)         118530 (27.99%)         Reference           2nd Quartile         10882 (25.31%)         101620 (24%)         0.776 (0.67, 0.89)           3rd Quartile         7621 (17.73%)         101499	Female	21961 (51.08%)	232798 (54.97%)	Reference
White         14465 (33.64%)         86010 (20.31%)         Reference           Native American or Alaskan         63 (0.15%)         422 (0.1%)         0.765 (0.58, 1.01)           Asian         2066 (4.81%)         20229 (4.78%)         0.556 (0.53, 0.58)           Black or African American         341 (0.79%)         2870 (0.68%)         0.545 (0.48, 0.61)           Native Hawaiian or Pacific Islander         152 (0.35%)         2037 (0.48%)         0.363 (0.31, 0.43)           Other         7900 (18.37%)         54667 (12.91%)         0.578 (0.56, 0.6)           Unknown         18008 (41.88%)         257237 (60.74%)         0.29 (0.28, 0.3)           Zip Code POP with Bachelors         11291 (26.26%)         115455 (27.26%)         Reference           2nd Quartile         11291 (26.26%)         102569 (24.22%)         0.751 (0.64, 0.89)           3rd Quartile         7348 (17.09%)         100281 (23.68%)         0.549 (0.44, 0.69)           4th Quartile         5974 (13.89%)         105167 (24.83%)         0.482 (0.37, 0.62)           Zip Code POP insured         18911 (43.98%)         118530 (27.99%)         Reference           2nd Quartile         10882 (25.31%)         101620 (24%)         0.776 (0.67, 0.89)           3rd Quartile         7621 (17.73%)         101499 (23.97%)	Male	21034 (48.92%)	190674 (45.03%)	1.205 (1.18, 1.23)
Native American or Alaskan       63 (0.15%)       422 (0.1%)       0.765 (0.58, 1.01)         Asian       2066 (4.81%)       20229 (4.78%)       0.556 (0.53, 0.58)         Black or African American       341 (0.79%)       2870 (0.68%)       0.545 (0.48, 0.61)         Native Hawaiian or Pacific Islander       152 (0.35%)       2037 (0.48%)       0.363 (0.31, 0.43)         Other       7900 (18.37%)       54667 (12.91%)       0.578 (0.56, 0.6)         Unknown       18008 (41.88%)       257237 (60.74%)       0.29 (0.28, 0.3)         Zip Code POP with Bachelors         1st Quartile       18382 (42.75%)       115455 (27.26%)       Reference         2nd Quartile       11291 (26.26%)       102569 (24.22%)       0.751 (0.64, 0.89)         3rd Quartile       7348 (17.09%)       100281 (23.68%)       0.549 (0.44, 0.69)         4th Quartile       5974 (13.89%)       105167 (24.83%)       0.482 (0.37, 0.62)         Zip Code POP insured       18911 (43.98%)       118530 (27.99%)       Reference         2nd Quartile       10882 (25.31%)       101620 (24%)       0.776 (0.67, 0.89)         3rd Quartile       7621 (17.73%)       101499 (23.97%)       0.681 (0.56, 0.83)         4th Quartile       5581 (12.98%)       101823 (24.04%)       0.508 (0.41, 0.63)	Race	, , , ,		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	White	14465 (33.64%)	86010 (20.31%)	Reference
Black or African American         341 (0.79%)         2870 (0.68%)         0.545 (0.48, 0.61)           Native Hawaiian or Pacific Islander         152 (0.35%)         2037 (0.48%)         0.363 (0.31, 0.43)           Other         7900 (18.37%)         54667 (12.91%)         0.578 (0.56, 0.6)           Unknown         18008 (41.88%)         257237 (60.74%)         0.29 (0.28, 0.3)           Zip Code POP with Bachelors         115455 (27.26%)         Reference           2nd Quartile         11291 (26.26%)         102569 (24.22%)         0.751 (0.64, 0.89)           3rd Quartile         7348 (17.09%)         100281 (23.68%)         0.549 (0.44, 0.69)           4th Quartile         5974 (13.89%)         105167 (24.83%)         0.482 (0.37, 0.62)           Zip Code POP insured         18911 (43.98%)         118530 (27.99%)         Reference           2nd Quartile         10882 (25.31%)         101620 (24%)         0.776 (0.67, 0.89)           3rd Quartile         7621 (17.73%)         101499 (23.97%)         0.681 (0.56, 0.83)           4th Quartile         5581 (12.98%)         101823 (24.04%)         0.508 (0.41, 0.63)	Native American or Alaskan	63 (0.15%)	422 (0.1%)	0.765 (0.58, 1.01)
Native Hawaiian or Pacific Islander         152 (0.35%)         2037 (0.48%)         0.363 (0.31, 0.43)           Other         7900 (18.37%)         54667 (12.91%)         0.578 (0.56, 0.6)           Unknown         18008 (41.88%)         257237 (60.74%)         0.29 (0.28, 0.3)           Zip Code POP with Bachelors         1st Quartile         18382 (42.75%)         115455 (27.26%)         Reference           2nd Quartile         11291 (26.26%)         102569 (24.22%)         0.751 (0.64, 0.89)           3rd Quartile         7348 (17.09%)         100281 (23.68%)         0.549 (0.44, 0.69)           4th Quartile         5974 (13.89%)         105167 (24.83%)         0.482 (0.37, 0.62)           Zip Code POP insured         1st Quartile         18911 (43.98%)         118530 (27.99%)         Reference           2nd Quartile         10882 (25.31%)         101620 (24%)         0.776 (0.67, 0.89)           3rd Quartile         7621 (17.73%)         101499 (23.97%)         0.681 (0.56, 0.83)           4th Quartile         5581 (12.98%)         101823 (24.04%)         0.508 (0.41, 0.63)	Asian	2066 (4.81%)	20229 (4.78%)	$0.556 \ (0.53, \ 0.58)$
Other         7900 (18.37%)         54667 (12.91%)         0.578 (0.56, 0.6)           Unknown         18008 (41.88%)         257237 (60.74%)         0.29 (0.28, 0.3)           Zip Code POP with Bachelors           1st Quartile         18382 (42.75%)         115455 (27.26%)         Reference           2nd Quartile         11291 (26.26%)         102569 (24.22%)         0.751 (0.64, 0.89)           3rd Quartile         7348 (17.09%)         100281 (23.68%)         0.549 (0.44, 0.69)           4th Quartile         5974 (13.89%)         105167 (24.83%)         0.482 (0.37, 0.62)           Zip Code POP insured         18911 (43.98%)         118530 (27.99%)         Reference           2nd Quartile         1882 (25.31%)         101620 (24%)         0.776 (0.67, 0.89)           3rd Quartile         7621 (17.73%)         101499 (23.97%)         0.681 (0.56, 0.83)           4th Quartile         5581 (12.98%)         101823 (24.04%)         0.508 (0.41, 0.63)	Black or African American	341 (0.79%)		0.545 (0.48, 0.61)
Unknown         18008 (41.88%)         257237 (60.74%)         0.29 (0.28, 0.3)           Zip Code POP with Bachelors           1st Quartile         18382 (42.75%)         115455 (27.26%)         Reference           2nd Quartile         11291 (26.26%)         102569 (24.22%)         0.751 (0.64, 0.89)           3rd Quartile         7348 (17.09%)         100281 (23.68%)         0.549 (0.44, 0.69)           4th Quartile         5974 (13.89%)         105167 (24.83%)         0.482 (0.37, 0.62)           Zip Code POP insured           1st Quartile         18911 (43.98%)         118530 (27.99%)         Reference           2nd Quartile         10882 (25.31%)         101620 (24%)         0.776 (0.67, 0.89)           3rd Quartile         7621 (17.73%)         101499 (23.97%)         0.681 (0.56, 0.83)           4th Quartile         5581 (12.98%)         101823 (24.04%)         0.508 (0.41, 0.63)	Native Hawaiian or Pacific Islander	152 (0.35%)	2037 (0.48%)	0.363 (0.31, 0.43)
Zip Code POP with Bachelors         1st Quartile       18382 (42.75%)       115455 (27.26%)       Reference         2nd Quartile       11291 (26.26%)       102569 (24.22%)       0.751 (0.64, 0.89)         3rd Quartile       7348 (17.09%)       100281 (23.68%)       0.549 (0.44, 0.69)         4th Quartile       5974 (13.89%)       105167 (24.83%)       0.482 (0.37, 0.62)         Zip Code POP insured         1st Quartile       18911 (43.98%)       118530 (27.99%)       Reference         2nd Quartile       10882 (25.31%)       101620 (24%)       0.776 (0.67, 0.89)         3rd Quartile       7621 (17.73%)       101499 (23.97%)       0.681 (0.56, 0.83)         4th Quartile       5581 (12.98%)       101823 (24.04%)       0.508 (0.41, 0.63)	Other	7900 (18.37%)	54667 (12.91%)	0.578 (0.56, 0.6)
1st Quartile       18382 (42.75%)       115455 (27.26%)       Reference         2nd Quartile       11291 (26.26%)       102569 (24.22%)       0.751 (0.64, 0.89)         3rd Quartile       7348 (17.09%)       100281 (23.68%)       0.549 (0.44, 0.69)         4th Quartile       5974 (13.89%)       105167 (24.83%)       0.482 (0.37, 0.62)         Zip Code POP insured         1st Quartile       18911 (43.98%)       118530 (27.99%)       Reference         2nd Quartile       10882 (25.31%)       101620 (24%)       0.776 (0.67, 0.89)         3rd Quartile       7621 (17.73%)       101499 (23.97%)       0.681 (0.56, 0.83)         4th Quartile       5581 (12.98%)       101823 (24.04%)       0.508 (0.41, 0.63)	Unknown	18008 (41.88%)	257237 (60.74%)	0.29 (0.28, 0.3)
2nd Quartile       11291 (26.26%)       102569 (24.22%)       0.751 (0.64, 0.89)         3rd Quartile       7348 (17.09%)       100281 (23.68%)       0.549 (0.44, 0.69)         4th Quartile       5974 (13.89%)       105167 (24.83%)       0.482 (0.37, 0.62)         Zip Code POP insured         1st Quartile       18911 (43.98%)       118530 (27.99%)       Reference         2nd Quartile       10882 (25.31%)       101620 (24%)       0.776 (0.67, 0.89)         3rd Quartile       7621 (17.73%)       101499 (23.97%)       0.681 (0.56, 0.83)         4th Quartile       5581 (12.98%)       101823 (24.04%)       0.508 (0.41, 0.63)	Zip Code POP with Bachelors			
3rd Quartile       7348 (17.09%)       100281 (23.68%)       0.549 (0.44, 0.69)         4th Quartile       5974 (13.89%)       105167 (24.83%)       0.482 (0.37, 0.62)         Zip Code POP insured         1st Quartile       18911 (43.98%)       118530 (27.99%)       Reference         2nd Quartile       10882 (25.31%)       101620 (24%)       0.776 (0.67, 0.89)         3rd Quartile       7621 (17.73%)       101499 (23.97%)       0.681 (0.56, 0.83)         4th Quartile       5581 (12.98%)       101823 (24.04%)       0.508 (0.41, 0.63)	1st Quartile	18382 (42.75%)	115455 (27.26%)	Reference
4th Quartile       5974 (13.89%)       105167 (24.83%)       0.482 (0.37, 0.62)         Zip Code POP insured         1st Quartile       18911 (43.98%)       118530 (27.99%)       Reference         2nd Quartile       10882 (25.31%)       101620 (24%)       0.776 (0.67, 0.89)         3rd Quartile       7621 (17.73%)       101499 (23.97%)       0.681 (0.56, 0.83)         4th Quartile       5581 (12.98%)       101823 (24.04%)       0.508 (0.41, 0.63)	2nd Quartile	11291 (26.26%)	102569 (24.22%)	0.751 (0.64, 0.89)
Zip Code POP insured         1st Quartile       18911 (43.98%)       118530 (27.99%)       Reference         2nd Quartile       10882 (25.31%)       101620 (24%)       0.776 (0.67, 0.89)         3rd Quartile       7621 (17.73%)       101499 (23.97%)       0.681 (0.56, 0.83)         4th Quartile       5581 (12.98%)       101823 (24.04%)       0.508 (0.41, 0.63)	3rd Quartile	7348 (17.09%)	100281 (23.68%)	0.549 (0.44, 0.69)
1st Quartile       18911 (43.98%)       118530 (27.99%)       Reference         2nd Quartile       10882 (25.31%)       101620 (24%)       0.776 (0.67, 0.89)         3rd Quartile       7621 (17.73%)       101499 (23.97%)       0.681 (0.56, 0.83)         4th Quartile       5581 (12.98%)       101823 (24.04%)       0.508 (0.41, 0.63)	4th Quartile	5974 (13.89%)	105167 (24.83%)	0.482 (0.37, 0.62)
2nd Quartile       10882 (25.31%)       101620 (24%)       0.776 (0.67, 0.89)         3rd Quartile       7621 (17.73%)       101499 (23.97%)       0.681 (0.56, 0.83)         4th Quartile       5581 (12.98%)       101823 (24.04%)       0.508 (0.41, 0.63)	Zip Code POP insured	,		,
3rd Quartile       7621 (17.73%)       101499 (23.97%)       0.681 (0.56, 0.83)         4th Quartile       5581 (12.98%)       101823 (24.04%)       0.508 (0.41, 0.63)	1st Quartile	18911 (43.98%)	118530 (27.99%)	Reference
3rd Quartile       7621 (17.73%)       101499 (23.97%)       0.681 (0.56, 0.83)         4th Quartile       5581 (12.98%)       101823 (24.04%)       0.508 (0.41, 0.63)	2nd Quartile	10882 (25.31%)	101620 (24%)	0.776 (0.67, 0.89)
	3rd Quartile	7621 (17.73%)	101499 (23.97%)	
•		5581 (12.98%)		0.508 (0.41, 0.63)
	Zip Code Pop Density (1000ppl/km^2)	, ,	, , ,	,

<sup>\*</sup> Adjusted for all covariates listed plus zip code median income and time of test in days

 $<sup>^{\</sup>dagger}$  Abreviations: CI = confidence interval, POP = percentage of population

## Model time gam with interaction between days and median income

